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DEVLUSTRO
Empowering Talent ▲ Enabling Careers

SEMESTER 1 – English Communication & SoftSkills – Part 1

Aim

To educate and enrich the students on setting goals, career planning and lateral thinking. Equip them on techniques of reading, learning and listening skills.

Course Objectives

To enable students to,

- Assess individual communication skills.
- Plan career
- Set Goals
- Enhance their ability to build stories and situational thinking.
- Improve their language through grammar
- Enhance techniques such as listening, non-verbal communication, verbal oral& written skills etc.

Unit I

Assessment of individual levels of communication skills, aptitude and employability skills; Psychometric test, SWOT analysis; Planning on setting goals; Understanding the stand of students, College Ethics.

Unit II

Introduction to Career planning; General Motivation; Communication Skills; Goal setting – Introduction to Soft Skills - Presentation skills - Intra-personal skills.

Unit III

Reading Skills, Learning & Studying Skills, Memory Techniques, Programmed Thinking, Lateral Thinking, Creativity, Questioning & Listening Skills.

Unit IV

Initiation, Stage Fear, Lateral Thinking; Self Introduction using an Adjective & Noun – Newspaper Assessment on Nouns; Pronouns – Passage writing by replacing noun with Pronoun; Verbs - Newspaper Assessment on Verbs; Adjectives & Adverbs; Articles - Mime the profession, Assessment for Articles; Prepositions; Past, Present and Future Tense; Situational GD & Story Telling on Tenses; Simple, Compound and Complex Sentences; Active & Passive Voice; Sentence Formation and Completion.

Unit V

Art of communication – the communication process - Word building and Role play; Exercise on English Language through symposiums and workshops.

References

1) A Practical Course in Spoken English by J.K.Gangal
2) Effective English Communication for you by V.Shamala
3) Developing Communication Skills by Krishna Mohan &MeeraBanerji
4) English for Competitive Exams by Bhatnagar

SEMESTER 2 – English Communication & SoftSkills – Part 2

Aim

To educate and enhance the students on English language, story building and article summarization. Equip the students on group discussion and public speaking skills.

Course Objectives

To enable students to,

- Enhance English Language and Listening Ability
- Enhance Non-Verbal Communication
- Improve their written communication through Story- Building, Article Summarization and Audio/Video Analysis.
- Enhance their group behavior and team building skills.
- Build resumes, speak in public, debate and discuss in groups

Unit I

English language enhancement- Business Idioms- Indianisms in English- Common Errors in Pronunciation - Signposts in English- Verbal ability- Phrases, clauses and modifiers - errors in tenses – prepositional errors – parallelism errors – mood, conditionals and multiple usages.

Unit II

English listening- hearing Vs. listening - Nonverbal communication – Appearance, dressing and grooming -Tips to maintain good impression at work - business etiquette – basic postures and gestures and table manners, Body language - dealing with people communication - media etiquette - telephone etiquette, email etiquette.

Unit III

Written Communication - Story Building; Article Summarization, Audio Analysis & Voice Recording; Article Summarization & Movie / Video Analysis;

Unit IV

Group discussion, interviews and presentation skills - Group behaviour – Team Work – Team building – Open and Closed group discussions. Public speaking skills – Social Phobia – Eliminating Fear - Organizing speech and effective delivery – Common etiquette of Public speaking - opening and closing of speech, audience management and styles.

Unit V

Exercises on Resume writing - Public speaking, Group discussion, debate, extempore, quiz and contemporary group play and role play.

References

1. Word Power Made Easy by Norman Lewis
2. High School English Grammar by Wren and Martin
3. English Conversation Practice by Grant Taylor
4. Group Discussion and Interviews by Anand Gangly
5. Art of Social Media by Guy Kawasaki

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SEMESTER 3 – Aptitude & Cognitive Skills – Part 1

Aim:

To educate and enrich the students on quantitative ability, reasoning ability, and verbal ability.

Course Objectives

To enable students to,

- Improve their quantitative ability.
- Improve the ability of arithmetic reasoning
- Enhance their verbal ability through vocabulary building and grammar
- Equip with creative thinking and problem solving skills

Unit I

Quantitative Ability – I

Problems on Trains, Time and Distance, Height and Distance, Time and Work

Unit II

Quantitative Ability – II

Problems on Ages, Alligation or Mixture, Chain Rule, Simple Interest, Simple Equation, Theory Of Equation

Unit III

Reasoning Ability – I

Analytical Reasoning, Pipes and Cistern, Logical Problems, Logical Games, Logical Deduction, Data Sufficiency, Arithmetic Reasoning

Unit IV

Verbal Ability – I

Idioms & Phrases, Synonyms, Antonyms, Classification

Unit V

Creativity Ability – I

Venn Diagrams, Cube and Cuboids, Dice, Cubes and Dice, Figure Matrix

References

1. Quantitative Aptitude for Competitive Exams by R. S. Agarwal
2. Quantum CAT by Sarvesh Verma
3. A Modern Approach to Logical Reasoning by R. S. Agarwal
4. Verbal Ability and Reading Comprehension by Arun Sharma

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SEMESTER 4 – Aptitude & Cognitive Skills – Part 2

Aim

To educate and enrich the students on quantitative ability, reasoning ability and verbal ability.

Course Objectives

To enable students to,

- Improve their quantitative ability.
- Improve their reasoning ability.
- Enhance their verbal ability through vocabulary building and grammar
- Equip with creative thinking and problem solving skills

Unit I

Quantitative Ability – III

Compound Interest, Profit and Loss, Partnership, Percentage, Set Theory

Unit II

Quantitative Ability – IV

True Discount, Ratio and Proportion, Simplification, Problems On H.C.F and L.C.M

Unit III

Reasoning Ability – II

Course of Action, Cause and Effect, Statement and Conclusion, Statement and Argument, Data Sufficiency (DS), Statement and Assumption, Making Assumptions

Unit IV

Verbal Ability – II

Change of Voice, Change of Speech, Letter and Symbol Series, Essential Part, Verbal Reasoning, Analyzing Arguments

Unit V

Creativity Ability – II

Seating Arrangement, Direction Sense Test, Character Puzzles, Missing Letters Puzzles, Mirror &Water Images

References

1. Quantitative Aptitude for Competitive Exams by R. S. Agarwal
2. Quantum CAT by Sarvesh Verma
3. A Modern Approach to Logical Reasoning by R. S. Agarwal
4. Verbal Ability and Reading Comprehension by Arun Sharma

SEMESTER 5 – Problem Solving Using C Programming

COURSE OBJECTIVES

The course aims to provide exposure to problem-solving through programming. It aims to train the student to the basic concepts of the C-programming language. This course involves a lab component which is designed to give the student hands-on experience with the concepts.

COURSE OUTCOMES

Upon completion of this course, the students will be able to:

- Identify situations where computational methods and computers would be useful.
- Given a computational problem, identify and abstract the programming task involved.
- Approach the programming tasks using techniques learned and write pseudo-code.
- Choose the right data representation formats based on the requirements of the problem.
- Use the comparisons and limitations of the various programming constructs and choose the right one for the task in hand.
- Write the program on a computer, edit, compile, debug, correct, recompile and run it.
- Identify tasks in which the numerical techniques learned are applicable and apply them to write programs, and hence use computers effectively to solve the task.

UNIT 1: INTRODUCTION TO PRINCIPLES OF PROGRAMMING:

Introduction to Programming , Programing Domain : Scientific Application , Business Applications, Artificial Intelligence, Systems Programming , Web Software Categories of Programming Languages: Machine Level Languages, Assembly Level Languages , High Level Languages Programming Design Methodologies : Top Down and Bottom UP Program Development Cycle with case study, Program Execution and Translation Process ,Problem solving using Algorithms and Flowcharts, Performance Analysis and Measurements: Time and Space complexity.

UNIT 2: INTRODUCTION TO C PROGRAMMING:

Features of C and its Basic Structure, Simple C programs, Constants, Integer Constants, Real Constants, Character Constants, String Constants, Backslash Character Constants, Concept of an Integer and Variable, Rules for naming Variables and assigning values to variables, Floating-point Numbers, Converting Integers to Floating-point and vice-versa, Mixed-mode Expressions, The type cast Operator, The type char, Keywords, Character Input and Output, Formatted input and output, The gets() and puts() functions, Interactive Programming.

UNIT 3: OPERATORS, EXPRESSIONS AND CONTROL STATEMENTS:

Arithmetic Operators, Unary Operators, Relational and Logical Operators, The Conditional Operator, Library Functions, Bitwise Operators, The Increment and Decrement Operators, The Size of Operator, Precedence of

operators, The goto statement, The if statement, The if-else statement, Nesting of if statements, The conditional expression, The switch statement, The while loop, The do…while loop, The for loop, The nesting of for loops, The break statement and continue statement.

UNIT 4: ARRAYS, STRINGS AND POINTERS:

One Dimensional Arrays, Passing Arrays to Functions, Multidimensional Arrays, Strings, Basics of Pointers, Pointers and One-dimensional Arrays, Pointer Arithmetic, Pointer Subtraction and Comparison, Similarities between Pointers and One-dimensional Arrays, Null pointers, Pointers and Strings, Pointers and two-dimensional arrays, Arrays of Pointers.

UNIT 5: STRUCTURES, UNIONS AND FUNCTIONS

Basics of Structures, Arrays of Structures, Pointers to Structures, Self-referential Structures, Unions, Function Philosophy, Function Basics, Function Prototypes, and Passing Parameters: Passing Parameter by value and Passing Parameter by reference, passing string to function, Passing array to function, Structures and Functions Recursion.

REFERENCES:

1. Programming in ANSI C - Balagurusamy - Tata McGraw-Hill Education, 2008
2. Programming in C (3rd Edition), by Stephen G. Kochan, Sams, 2004
3. Programming in C - Stephen G. Kochan, III Edition, Pearson Education.

SEMESTER 6 - Advanced C Programming

COURSE OBJECTIVES

The course is oriented to those who want to advance structured and procedural programming understating and to improve C programming skills. The major objective is to provide students with understanding of code organization and functional hierarchical decomposition with using complex data types..

COURSE OUTCOMES

Upon completion of this course, the students will be able to:

- Understanding a functional hierarchical code organization.
- Ability to define and manage data structures based on problem subject domain.
- Ability to work with textual information, characters and strings. • Ability to work with arrays of complex objects.
- Understanding a concept of object thinking within the framework of functional model.
- Understanding a concept of functional hierarchical code organization.
- Understanding a defensive programming concept. Ability to handle possible errors during program execution.

UNIT 1: INTRODUCTION TO RECURSION:

Introduction to Recursion, Types of Recursion - Head Recursion , Tail Recursion, Tree Recursion, Indirect Recursion and Nested Recursion . Recursion vs Looping - Analysis on efficiency of looping and recursion, Working of recursive code in main memory. Recurrence Relation , Different types of recurrence relation. Deriving time complexity and space complexity using recurrence relation.

UNIT 2: GROWTH FUNCTIONS AND RECURSION:

Polynomial Equations, Compare growth functions - order growth functions, omega growth functions, theta growth functions - Constant time, Linear time, Logarithmic time, Quadratic time and exponential time . Problems on Recursions - Factorial Number, Sum of first N Natural Numbers, Nth Fibinocci Number, Exponent Function, Taylor Series, Tower of Hanoi.

UNIT 3: STORAGE CLASSES, THE PREPROCESSOR AND DYNAMIC MEMORY ALLOCATION:

Storage Classes and Visibility, Automatic or local variables, Global variables, Static variables, External variables, File Inclusion, Macro Definition and Substitution, Macros with Arguments, Nesting of Macros, Conditional Compilation, Dynamic Memory Allocation, Allocating Memory with malloc, Allocating Memory with calloc, Freeing Memory, Reallocating Memory Blocks, Pointer Safety, The Concept of linked list, Inserting a node by using Recursive Programs, Sorting and Reversing a Linked List, Deleting the Specified Node in a Singly Linked

List.

UNIT 4: FILE MANAGEMENT:

Defining and Opening a file, Closing Files, Input/output Operations on Files, Predefined Streams, Error Handling during I/O Operations, Random Access to Files, Command Line Arguments.

UNIT 5: BIT MANIPULATION

The hexadecimal number system, C bitwise operators, Working with individual bits, How to check if a given number is a power of 2, Count the number of ones in the binary representation of the given number, Check if the i^{th} bit is set in the binary form of the given number, How to generate all the possible subsets of a set, Find the largest power of 2 (most significant bit in binary form), which is less than or equal to the given number N, Tricks with Bits, Applications of bit operations.

REFERENCES:

1. R. G. Dromey, "How to Solve It By Computer", Pearson, 1982
2. A.R. Bradley, "Programming for Engineers", Springer, 2011
3. Kernighan and Ritchie, "The C Programming Language", (2nd ed.) Prentice Hall, 1988